

WHAT IS CLAIMED IS:

1. An apparatus for coprocessor data access control, comprising
- a central processing unit, for executing central processing unit instructions to perform data processing, wherein the central processing unit instructions includes a plurality of coprocessor memory access instructions;
- 5 a memory unit, coupled to the central processing unit, for storing data words; and
- a coprocessor, coupled to the central processing unit and the memory unit, for accessing and processing the data words stored in the memory unit by one of addressing
- 10 modes under control of the coprocessor memory access instructions executed by the central processing unit, wherein
- the coprocessor memory access instruction having an indicating field, and N data words are accessed to or from the memory unit by the coprocessor according to the value of the indicating field, wherein N is a value greater than or equal to 1.
2. The apparatus for coprocessor data access control as claimed in claim 1, wherein the indicating field of the coprocessor memory access instruction includes a coprocessor number field, for storing information about a specific coprocessor to be activated.
3. The apparatus for coprocessor data access control as claimed in claim 1,
- 20 wherein the indicating field of the coprocessor memory access instruction includes a coprocessor register field, for storing information about specific registers to be used in the data processing.
4. The apparatus for coprocessor data access control as claimed in claim 1, wherein the indicating field of the coprocessor memory access instruction includes a

coprocessor number field and a coprocessor register field, wherein coprocessor number field is used for storing information about a specific coprocessor to be activated, and the coprocessor register field is used for storing information about specific registers to be used in the data processing.

- 5 5. A coprocessor data access control method, comprising the steps of:
- providing an instruction having an indicating field; and
- accessing N data words to or from a memory unit by a specified coprocessor according to the value in the coprocessor indicating field, wherein N is a value greater than or equal to 1, and the number of word data depends on the value in the coprocessor number field and/or the value in the coprocessor register field.
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6. The method for coprocessor data access control as claimed in claim 5, wherein the indicating field of the coprocessor memory access instruction includes a coprocessor number field, for storing information about a specific coprocessor to be activated.

- 15 7. The method for coprocessor data access control as claimed in claim 5, wherein the indicating field of the coprocessor memory access instruction includes a coprocessor register field, for storing information about specific registers to be used in the data processing.

8. The method for coprocessor data access control as claimed in claim 5, wherein the indicating field of the coprocessor memory access instruction includes a coprocessor number field and a coprocessor register field, wherein coprocessor number field is used for storing information about a specific coprocessor to be activated, and the coprocessor register field is used for storing information about specific registers to be used in the data processing.
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9. An instruction format for a coprocessor data access control, wherein the instruction format includes an indicating field, and a particular coprocessor to be used and the number of data words to be accessed to or from a memory unit is determined by the value of in the indicating field.

5 10. The instruction format of claim 9, wherein the indicating field of the instruction format is a coprocessor number field.

11. The instruction format of claim 9, wherein the indicating field of the instruction format is a coprocessor register field.

10 12. The instruction format of claim 9, wherein the indicating field of the coprocessor memory access instruction includes a coprocessor number field and a coprocessor register field, wherein coprocessor number field is used for storing information about a specific coprocessor to be activated, and the coprocessor register field is used for storing information about specific registers to be used in the data processing.